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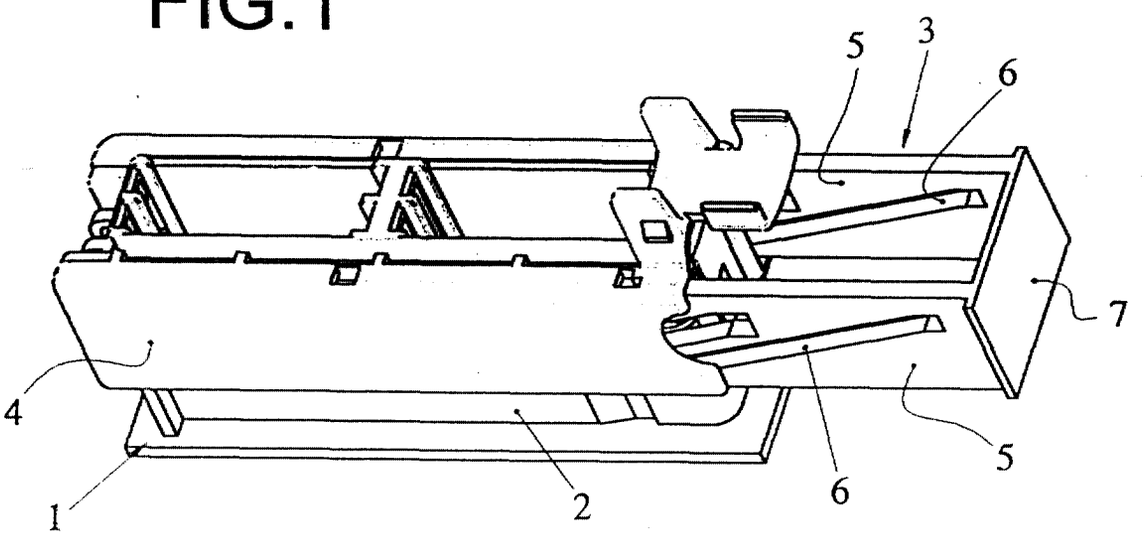
(54) Improved electrical connector box

(57) An improved electrical connector box made up of a housing with side walls and frontal opening adapted to house a sliding body associated with a connector made up of two parallel arms provided with inclined parallel guides, causing said arms to move with respect to the housing. The side walls have pivots, perpendicular to the same, which are introduced inside the guides of said arms.

FIG.1



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Description

[0001] The present application for Patent of Invention consists, as its title indicates, of an "IMPROVED ELECTRICAL CONNECTOR BOX", whose new features of construction, shape and design fulfil the objective for which it has been specifically planned with maximum safety and effectiveness.

[0002] In the state of the art there are electrical connectors of different types and modalities intended to serve as a joining point of the connection between plug terminals and socket terminals, all of which are joined and mounted at the ends of the respective electrical conductors. The connectors allow the operations of terminal connection to be carried out rapidly, while maintaining an order, and being able to use a large number of similar connectors for many connections between plug terminals and socket terminals. The connectors are conventionally situated in a connector box inside which the connector of the plug terminals is introduced and, through the opposite part, the connector of the socket terminals. This is carried out by having a sliding body or slider which allows said connectors to couple the plug terminals and the socket terminals inside the connector box without it being necessary for the inner cavities to have determinate features, assuring the user that the position in which the connector is placed inside the cavity is the correct one. This sliding body is made up of two parallel arms provided with corresponding inclined guides which are introduced into the connector to cause the coupling of the same in the connector box. Both arms are joined at one of their ends by an operating element of the sliding body.

[0003] In the normal practice of installing these electrical connectors, for example in the car sector, there is a wide range of electrical connectors adapted to be installed in the corresponding connector boxes. The main drawback which exists in installing connectors in their respective connector boxes is that the operator or fitter finds it difficult to identify the appropriate connector for the connector box where the former is to be installed, and has to waste time in connection tests to determine the connector which corresponds to the connector box in question. This involves a considerable increase in installation times which negatively influence the product's final cost.

[0004] In this sense, the present invention involves an attempt to solve this drawback by providing a new connector box with which it is possible to distinguish easily the appropriate connector which is to be installed in the same. For the operator this means greater ease of installation and a reduction of time in the process of connecting the elements of the electrical system in question.

[0005] Our intention is to provide an improved connector box inside which there is a plurality of pivots which extend perpendicularly with respect to the inner walls of the connector box and towards the inside of the same, said pivots having different diameters. These pivots are introduced inside the inclined guides formed in the parallel arms of the sliding body mentioned above. Accordingly, an effect called "connector polarisation effect" is obtained, which consists in that the electrical connector appropriate for a determinate connector box is only that which is provided with guides with a width corresponding to the pivot of the greatest diameter in the connector box. Otherwise, the sliding body cannot be introduced completely into the connector box and, therefore, the operator quickly and effectively detects that said connector does not correspond with the installation being carried out.

[0006] It should be noted that with a small structural variation in the connector box, and without varying at all the configuration of conventional connectors (for example of the slider type, as described) it is possible to determine, in accordance with the object of the invention, the appropriate connector for each connector box in a way that is fast for the operator who is installing said elements in an electrical system, for example, a car.

[0007] More specifically and in accordance with an aspect of the invention, in the inner part of each side wall of the electrical connector box a series of three pivots is formed which are defined by cylindrical elements of different diameter. The arrangement of the cylindrical pivots is such that the one with the smallest diameter is situated at one end of the side wall of the connector box.

[0008] The features and advantages of the improved electrical connector box which is the object of the present invention will be made clearer in the detailed description of a preferred embodiment of the same. Said description will be given, hereinafter, by way of non-restrictive example, with reference to the drawings which accompany it, in which:

Figure 1 is a perspective view of a connector with its sliding body or slider partially introduced into the connector box.

Figure 2 is a plan view of the electrical connector of figure 1.

Figure 3 is a side elevational view of the connector illustrated in figure 1.

Figure 4 is a side elevational view corresponding to the inner part of a side wall of the connector box.

[0009] The elements which appear in the attached drawings are the following: (1) connector box, (2) side walls of the connector box, (3) sliding body or slider, (4) electrical connector, (5) arms of the sliding body, (6) guides of the arms, (7) operating element of the sliding body, (8) pivot with the largest diameter, (9) pivot, and (10) pivot with the smallest diameter.

[0010] The improved electrical connector box (1) of the invention is basically made up of a housing provided with side walls (2), inside which there are the corresponding terminals, and a frontal opening to house a sliding body or slider (3). The slider (3) is associated

with the electrical connector (4) and the latter includes two parallel arms (5) in which there are parallel guides (6), inclined downwards, as shown in figures 1 and 4 of the attached drawings. The movement of the arms (5) with respect to the electrical connector box (1) causes the connector (4) to couple in the same and the connection of the terminals. The arms (5) of the slider (3) are joined at one of their ends by an operating element (7) which offers a surface upon which the operator applies the force necessary to couple the connector (4) as mentioned above.

[0011] With particular reference to figure 4 of the drawings, the side walls (3) of the connector box (1) are provided with a series of three pivots (8, 9, 10) which extend perpendicularly with respect to said side walls (3). These pivots (8, 9, 10) are introduced inside the guides (6) of the arms (5) of the slider (3) and serve to support it as it moves inside the connector (4) inwards (coupling position) or outwards (uncoupling position).

[0012] The diameter of each one of said pivots (8, 9, 10) is different so as to cause the so-called polarisation effect of the connectors, by virtue of which it is possible to differentiate and detect very rapidly the appropriate connector (4) for each connector box (1). Said effect consists in that it is only possible to couple in the connector box (1) the electrical connector (4) whose sliding element or slider (3) has guides (6) the width (A) of which corresponds with the pivot (8), that is, with that which has the greatest diameter (D), as may be observed in figure 4.

[0013] Said figure 4 illustrates the inner part of a side wall (2) of the housing of the connector box (1) of the invention, with the pivot with the smallest diameter (10) formed at the end of the same adjacent to the insertion area of the slider (3) which corresponds to the right-hand part of said figure. In this way the slider (3) of an inappropriate connector can be moved initially as its guides (6) allow the pivot (10) with the smallest diameter to be housed. However, the pivot (8) with the greatest diameter (D) cannot be housed in said guide (6) and, therefore, the slider (3) will not slide, said pivot (8) acting as a check and warning the operator or fitter that it is not the appropriate connector.

[0014] The materials of the elements which make up the improved electrical connector box, as well as the shapes, dimensions and other accessory elements of the same, may conveniently be replaced by others which are technically equivalent, provided that they do not depart from the essential nature of the present invention, nor from the inventive concept of the same, as defined in the claims included below.

Claims

1. "AN IMPROVED ELECTRICAL CONNECTOR BOX", made up of a housing (1) provided with side walls (2) and a frontal opening adapted to house a sliding body (3) associated with a connector (4) made up of two parallel arms (5) provided with a series of parallel guides (6), inclined downwards, causing said arms (5) to move with respect to the housing and the coupling of the electrical connector (4) in the corresponding connector box (1), characterised in that said side walls (2) of the connector box (1) are provided with a series of pivots (8, 9, 10) which extend perpendicularly to said side walls and which are introduced inside the guides (6) of said arms (5) of said sliding body (3), said pivots (8, 9, 10) having different diameters, so that it is only possible to couple in the connector box (1) the electrical connector (4) whose sliding element (3) has guides (6) with a width (A) corresponding to the pivot (8) with the largest diameter (D).

2. "AN IMPROVED ELECTRICAL CONNECTOR BOX" in accordance with claim 1, characterised in that said series of pivots consists of three cylindrical elements (8, 9, 10) of different diameter, the pivot (10) with the smallest diameter being arranged at one end of the side wall (2) of the connector box.

FIG.1

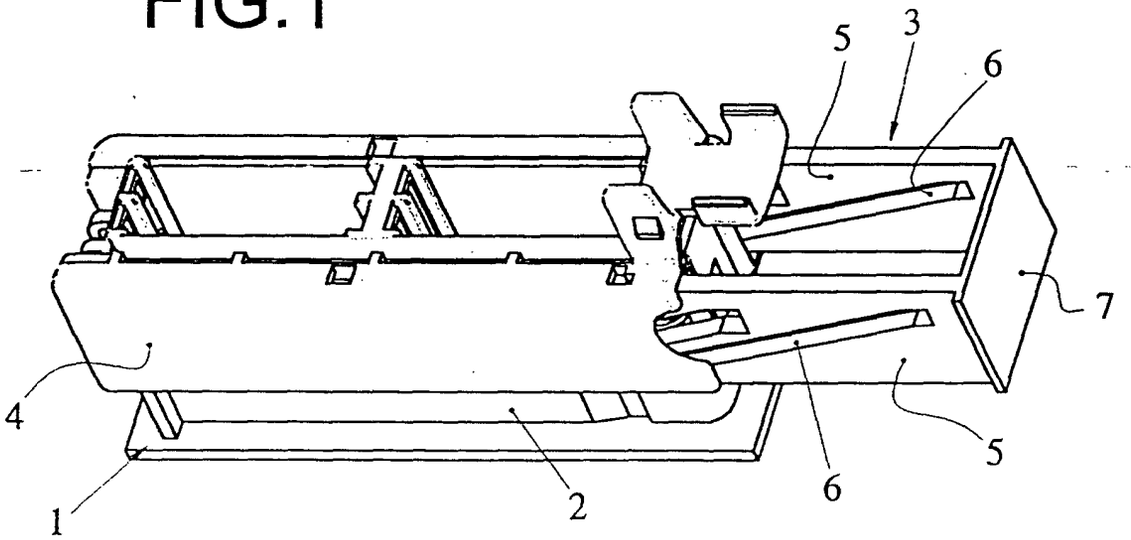

FIG.2

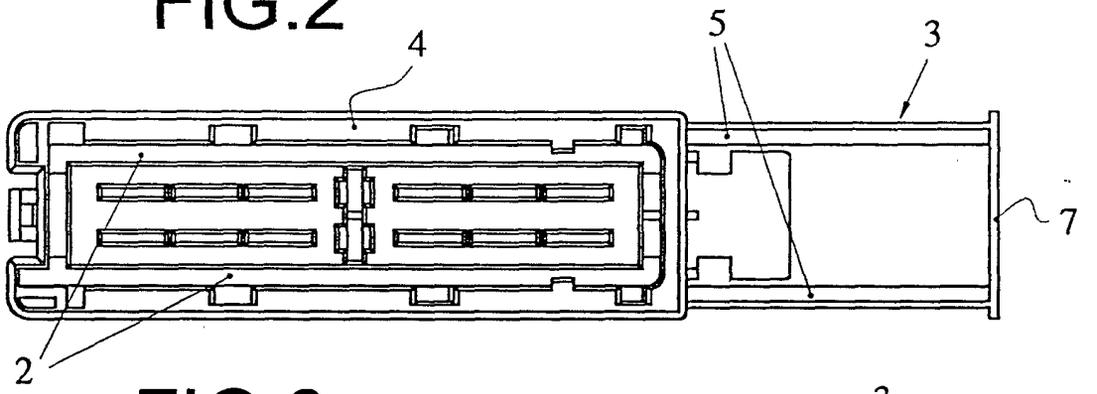

FIG.3

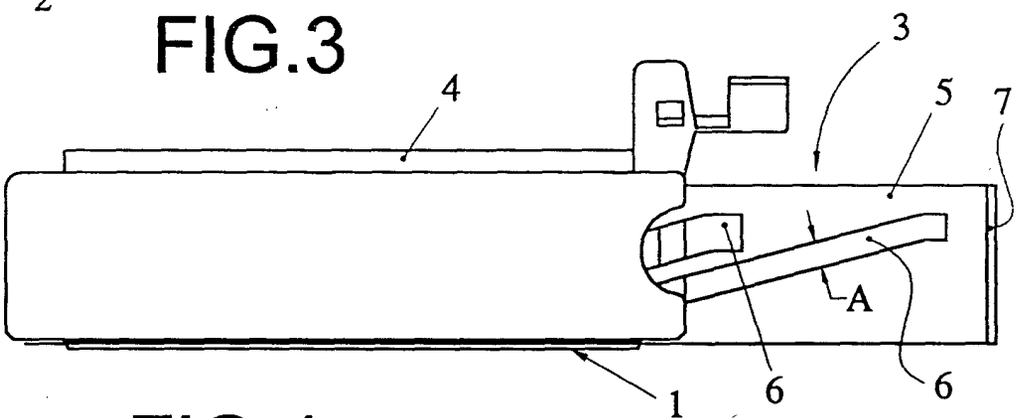

FIG.4